



World Meteorological Organization

Weather • Climate • Water

Regional Implementation of WIGOS (WMO Integrated Global Observing System) in the Pacific

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- An important role of WMO is to enable all the 191 Member countries across the world to collect standardised observations and achieve effective data management and exchange,
- These observations are needed for the provision of services which assist communities to reduce disaster risks and adapt to climate variability and change, amongst other benefits,



Introduction

(2/3)

- The WMO Strategic Plan 2012-2015 includes five priority areas, one of which is:
 - Implementation of the WMO Integrated Global Observing System (WIGOS) and WMO Information System (WIS),
- At the Regional level, this is reflected in the Regional Key Outcomes of the RA-V Strategic Operating Plan 2012-2015:
 - RKO 4.1.1: WIGOS is implemented
 - RKO 4.2.1: WIS is implemented

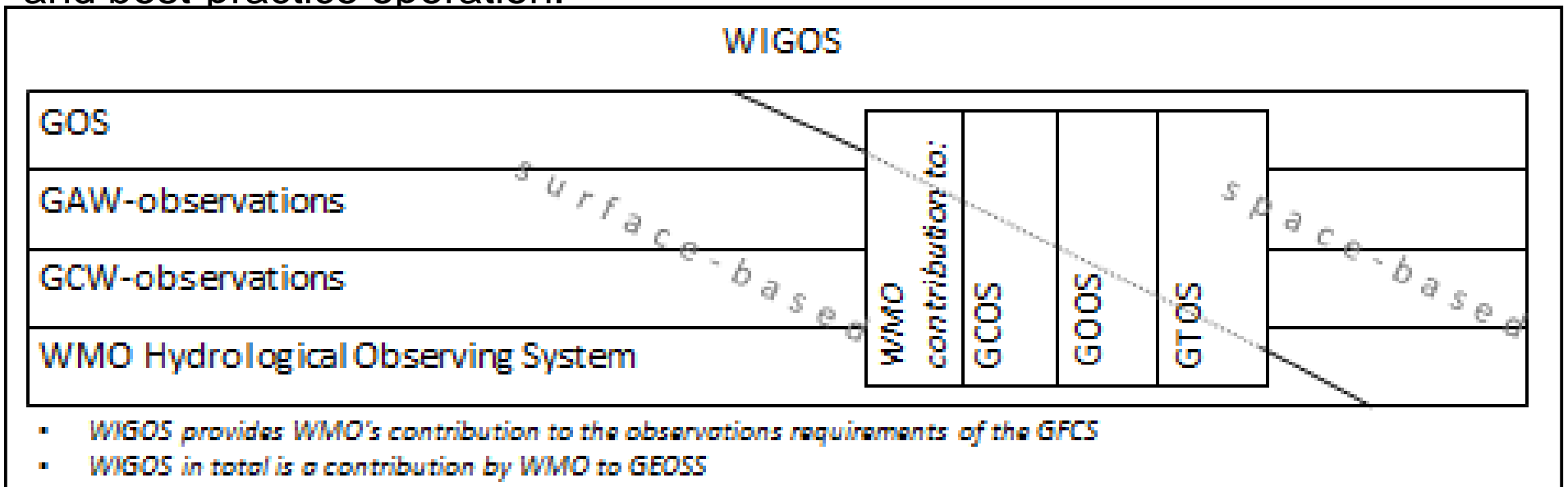


- And also in the Pacific Islands Meteorological Strategy which includes:
 - Pacific Key Outcome (PKO) 7: Improved quality of observations and coverage of networks in the Pacific Islands region,
 - Then under PKO 7 (amongst other elements):
 - 3. Coordinate the development and implementation of a regional WIGOS plan, ensuring that all countries and territories are integrated (not only WMO members).
 - 4. Promote and coordinate regional development and implementation plan for WIS.



The WIGOS framework: WMO observing systems

WIGOS provides a collective identity for all WMO observing systems, and a framework for enabling their integration, interoperability, optimized evolution and best-practice operation.



(from the WIGOS Implementation Plan...)

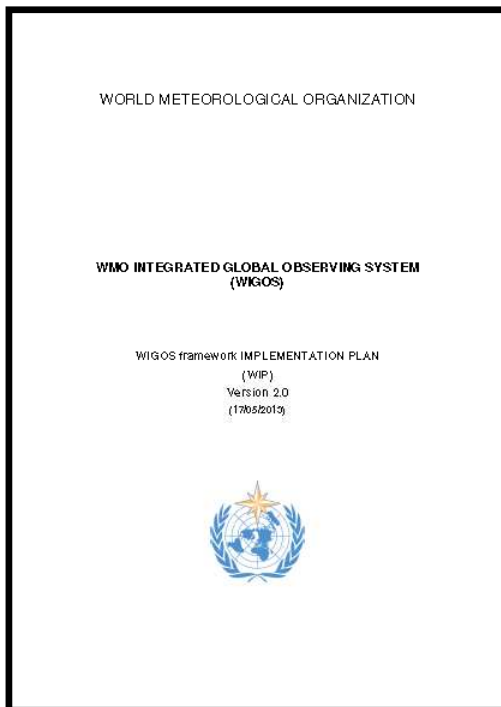
The component observing systems of WIGOS comprise:

- the Global Observing System (GOS),
- the observing component of the Global Atmosphere Watch (GAW),
- the WMO Hydrological Observing System (including the World Hydrological Cycle Observing System (WHYCOS)) and
- the observing component of the Global Cryosphere Watch (GCW),

including their surface-based and space-based components. The above component systems include all WMO contributions to the co-sponsored systems, i.e., GCOS, GOOS, GTOS, as well as the WMO contributions to GFCS and GEOSS.

The WIGOS framework: WIGOS Implementation Plan (WIP)

■ Ten Key Activity Areas:



1. Management of WIGOS implementation;
2. Collaboration with the WMO co-sponsored observing systems and international partner organizations and programmes;
3. Design, planning and optimized evolution;
4. Observing System operation and maintenance;
5. Quality Management;
6. Standardization, system interoperability and data compatibility;
7. The WIGOS Operational Information Resource;
8. Data and metadata management, delivery and archival;
9. Capacity development;
10. Communications and outreach.



The WIGOS framework: Ten Key Activity Areas

Management of WIGOS
Implementation

Collaboration with co-
sponsors and partners

To oversee, guide and coordinate WIGOS

Data
discovery,
delivery &
archival

*To ensure supply of and access to
WIGOS observations*



Design,
planning and
optimised
evolution

*To plan, implement and evolve
WIGOS component systems*

Observing
system
operation &
maintenance

Capacity
Development

To facilitate and support the operation of WIGOS

Communications
and outreach

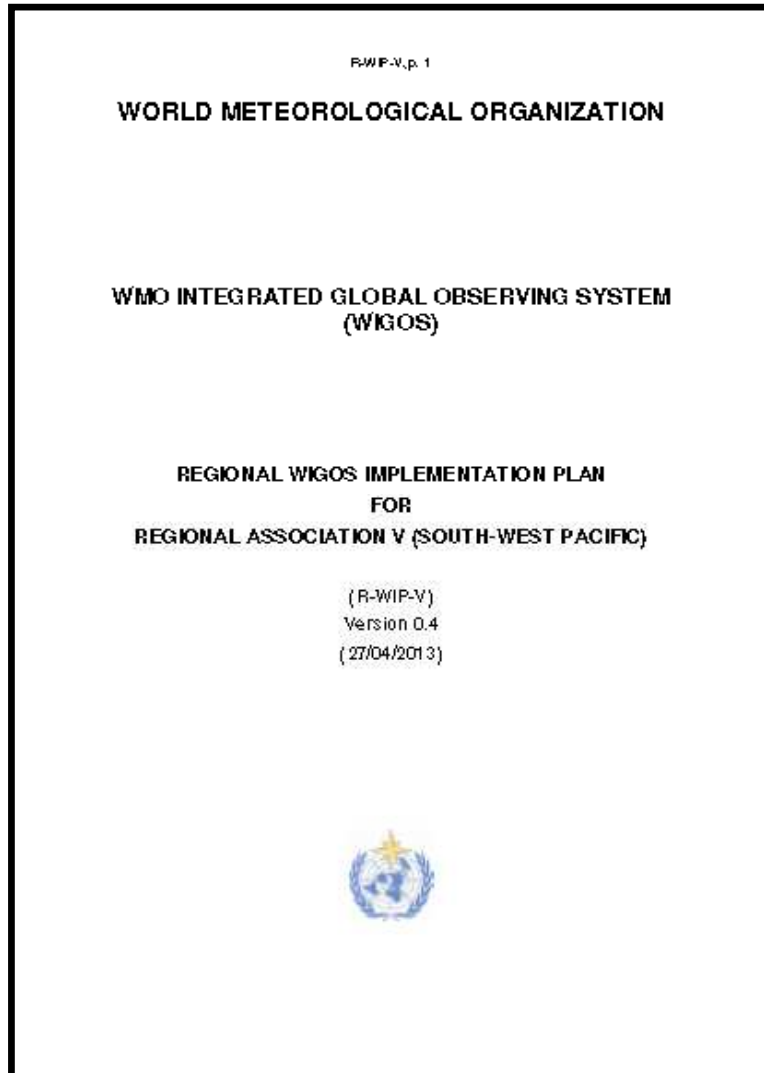
Operational
Information
Resource

Standards,
interoperability &
compatibility

Quality
Management



Regional WIGOS Implementation Plan (R-WIP-V)



The WIP was followed closely to produce a template for Regional WIGOS Implementation Plans:

- same ten Key Activity Areas,
- table of Implementation Activities for the Region,

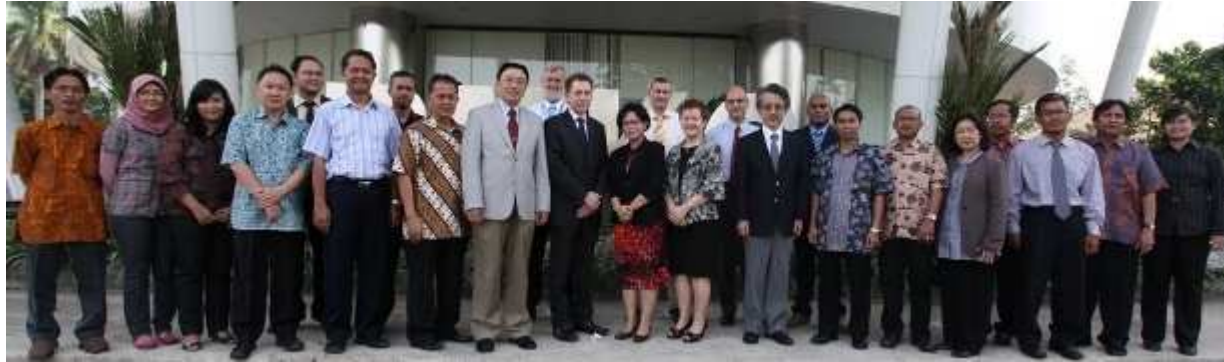
Each of the six WMO Regions has developed / is developing an R-WIP,

R-WIP-V has been:

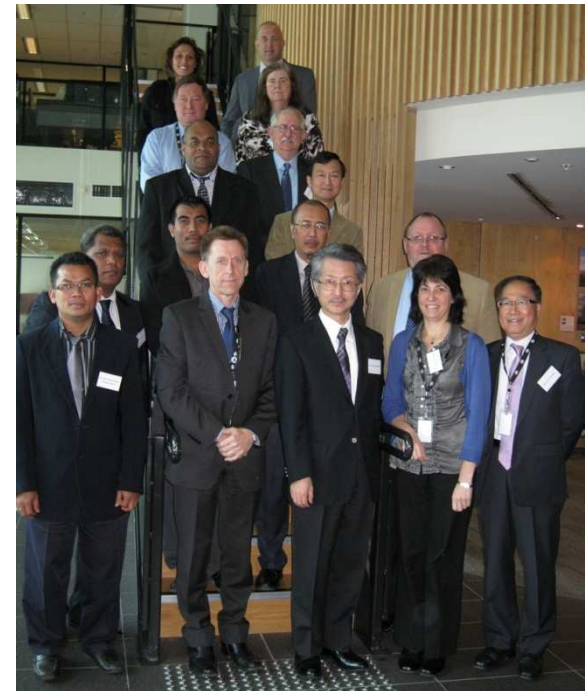
- drafted,
- presented to RA-V Management Group, and
- now out for comment from PRs of RA-V Member countries.



R-WIP-V: Table of Implementation Activities



- The table of Implementation Activities was drafted at the RA-V WIGOS Workshop (Jakarta, September 2012),
- then refined at the RA-V WG-Infrastructure meeting (Melbourne, April 2013)



R-WIP-V: Table of Implementation Activities

- The table of Implementation Activities can be addressed in part with our existing capacities by prioritising our efforts, however much important work will depend on cooperation and assistance,
- To interpret the table entries, note that:
 - R = Regional activity and N = National activity.
 - activity numbers: a.b.c, where
 - a is the number of the Key Activity Area,
 - b is for a Regional (2) or National (3) activity, and
 - c is simply a sequential number to distinguish activities



R-WIP-V: Table of Implementation Activities (1)

| 1. Management of WIGOS Implementation in Region V | | | | |
|---|---|---|----------|--|
| No. | Activity | Deliverables | Timeline | Responsibility |
| 1.2.1 R | Develop the Regional WIGOS Implementation Plan for Region V (R-WIP-V) | Regional WIGOS Implementation Plan for Region V (R-WIP-V) | 2012-13 | Drafting by WG-Infrastructure (TT-WIGOS), adoption by President RA-V |
| 1.2.2 R | Compile information from Member countries, other relevant partners and WMO sources as input to a “stock-take” of existing WMO observing systems in RA-V. | A report detailing all the current WMO observing systems in Region V, including the composition of networks, data outputs and who the owners/operators are. | 2013 | WG-Infrastructure (TT-WIGOS) assisted by Secretariat |
| 1.2.3 R | Assess the EGOS-IP and other WMO observing system implementation plans to identify actions relevant to RA-V and Member countries; assign priorities to these actions. | Prioritised list of actions for RA-V and for Members arising from the EGOS-IP and other IPs. | 2012-13 | Drafting by WG-Infrastructure (TT-WIGOS), adoption by President RA-V |
| 1.2.4 R | Provide an effective RA-V focal point to liaise with CBS about the implementation of EGOS-IP in RA-V. | An effective RA-V focal point for EGOS-IP, who is actively corresponding with CBS. | 2012-15 | RA-V MG, focal point for EGOS-IP |



R-WIP-V: Table of Implementation Activities (2)

| 2. Collaboration with WMO and co-sponsored observing systems | | | | |
|--|---|---|----------|---|
| No. | Activity | Deliverables | Timeline | Responsibility |
| 2.2.1 R | Identify and engage further potential partners for collaboration in the collection of observations on a Regional scale. Clarify the target area/s for collaboration and the mechanism for resolving governance issues. | A report on existing partnerships on a Regional level, to provide a baseline and reference, | 2012-15 | WG-Infrastructure (TT-WIGOS). |
| 2.3.1 N | Encourage Member countries to identify and engage further potential partners in the collection of observations for WMO programs. Clarify the target area/s for collaboration and the mechanism for resolving governance issues. | Increased number of collaborating partners at a National level and increased collection of observations. | 2012-15 | Encouragement by MG, action by all Member countries in RA-V. |
| 2.2.2 2.3.2 R, N | Collaborate with CIMO to develop a <i>reliable feedback mechanism</i> on the performance of instruments and systems in Region V. Provide feedback regularly. | A status report is provided to RA-V and CIMO on progress of meteorological observing systems against WMO regulations and standards. | 2013 | WG-Infrastructure (TT-Traceability) develop mechanism, Member countries in RA-V provide feedback. |



R-WIP-V: Table of Implementation Activities (3)

3. Design, planning and optimized evolution of WIGOS component observing systems at regional, sub-regional and national levels

| No. | Activity | Deliverables | Timeline | Responsibility |
|------------|---|---|----------|---|
| 3.2.1 R | Design and plan observing systems in the Region, taking into account: (i) the technical guidance of the technical commissions as represented in the EGOS-IP and other observation system implementation plans; (ii) the Regional priorities adopted by President RA-V (see action item 1.2.3); (iii) relevant actions identified in the Technical Plan of the Tropical Cyclone Committee for the South Pacific and South-East Indian Ocean; (iv) the need for “gap filling” and restoration of silent stations; and (v) cross-regional coordination opportunities. | Improved WMO observing system design in Region-V. | 2012-15 | Coordination by WG-Infrastructure (TT-WIGOS). |
| 3.3.1 N | Evolve and implement National observing systems, taking into account: (i) the technical guidance of the technical commissions as represented in the EGOS-IP and other observation system implementation plans; (ii) the Regional priorities adopted by President RA-V (see action item 1.2.3); (iii) relevant actions identified in the Technical Plan of the Tropical Cyclone Committee for the South Pacific and South-East Indian Ocean; (iv) the need for “gap filling” and restoration of silent stations. | Improved WMO observing systems in Region-V. | 2012-15 | Member countries in Region V. |



R-WIP-V: Table of Implementation Activities (3+)

3. Design, planning and optimized evolution of WIGOS component observing systems at regional, sub-regional and national levels

| No. | Activity | Deliverables | Timeline | Responsibility |
|------------|---|---|----------|-------------------------------|
| 3.2.2 R | Define and describe the Regional WIGOS Network (building on action item 1.2.2) as the collective identity for all WMO observing systems in Region V. | A report to convey the definition and description of the Regional WIGOS Network. | 2014 | WG-Infrastructure (TT-WIGOS). |
| 3.2.3 R | Validate the user requirements documented by the global RRR process against Regional user requirements; use the results to update the RRR user requirements database and to fine tune the EGOS-IP and observing system plans. | WMO observing systems are responsive to Regional user requirements. | 2013-15 | WG-Infrastructure (TT-WIGOS). |
| 3.3.2 N | Validate the user requirements documented by the global RRR process against National user requirements for WMO systems; use the results to update the RRR user requirements database and to fine tune the EGOS-IP and observing system plans. | WMO observing systems are responsive to National user requirements for WMO systems. | 2013-15 | Member countries in Region V. |



R-WIP-V: Table of Implementation Activities (4)

4. Integrated Observing System Operation and Maintenance

| No. | Activity | Deliverables | Timeline | Responsibility |
|------------|---|---|----------|--|
| 4.2.1 R | <p>Compile, from Member contributions, a set of examples of integrated operation and maintenance between observing system owners/operators, covering the sharing of experiences, practices and ideas, the sharing of expertise and the pooling of resources for joint activities; noting specifically that:</p> <p>(1) training is an effective way to share knowledge and skills;</p> <p>(2) funding for capacity development is often the trigger which enables increasingly integrated approaches.</p> <p>Promote this report amongst Member countries as a stimulus for thinking broadly about opportunities to benefit from integration.</p> | A report providing examples of integrated approaches to operation and maintenance. | 2013 | WG-Infrastructure (TT-WIGOS). |
| 4.2.2 R | Capacity development in data communication techniques related to observations collection and reporting | Reference material, case studies and training, leading to enhanced capacities | 2013-15 | WG-Infrastructure (TT-PSC) |
| 4.2.3 R | <p>Capacity Building in Radar Techniques in Southeast Asia, supported by appropriate technical missions to countries, through:</p> <ul style="list-style-type: none"> All the ASEAN developing countries will prepare a national report on their arrangements for the operational use of weather radar data; and A sub/cross-region (for the ASEAN developing countries) strategic plan for addressing technical issues and necessary actions identified in the national reports. | Enhanced capacity in monitoring and forecasting of severe weather using radar data. | 2013-15 | Those Member countries involved in the sub-Regional /cross-Regional (with RA-II) ASEAN Sub-Committee on Meteorology and Geophysics |

R-WIP-V: Table of Implementation Activities (5)

| 5. Integrated Quality Management | | | | |
|----------------------------------|--|--|----------|--|
| No. | Activity | Deliverables | Timeline | Responsibility |
| 5.2.1 R | Progressively achieve traceability to SI standards of measurements made throughout RA V, focusing initially on surface pressure, temperature, precipitation, humidity, also sea level. | Traceable observations from progressively more components of the Regional WIGOS Network. | 2012-15 | WG-Infrastructure (TT-Traceability), in collaboration with the RICs and Members. |
| 5.2.2 5.3.1 R, N | Develop a self-assessment tool to enable Members to follow CIMO guidelines for observations | Self-assessment tool. | 2014 | WG-Infrastructure (TT-Traceability), with input from Members. |
| 5.2.3 R | Actively review and respond to the findings of CBS' periodic data flow monitoring exercises. | An active review process. | 2012-15 | WG-Infrastructure (TT-WIGOS). |
| 5.2.4 R | Find new means of continuous monitoring of observations data quality in Region V with the support of Centres of the GDPFS (Global Data Processing and Forecasting System). | Request is made (for the systemic errors in observations from the analysis scheme) and collaboration is established with Chair OPAG-GDPFS on this topic. | 201x | WG-Infrastructure (TT-WIGOS), in collaboration with Centres of the GDPFS. |



R-WIP-V: Table of Implementation Activities (6)

| 6. Standardization, System Interoperability and Data Compatibility | | | | |
|--|--|--|----------|-------------------------------|
| No. | Activity | Deliverables | Timeline | Responsibility |
| 6.2.1 R | Achieve the migration to Table Driven Code Forms throughout Region V as specified by CBS. | Completed migration to Table Driven Code Forms throughout Region V. | 2014 | WG-Infrastructure (TT-TDCF). |
| 6.2.2 R | Develop a process to monitor and report on what Members currently do in relation to compliance with WIGOS standards. | A process is developed to monitor and report on what Members currently do in relation to compliance with WIGOS standards. | 20xx | WG-Infrastructure (TT-WIGOS). |
| 6.2.3 R | Review and suggest requirements for new WIGOS standards and/or regional best practices. | Proposals for new WIGOS standards and/or regional best practices. | 20xx | WG-Infrastructure (TT-WIGOS). |
| 6.2.4 6.3.1 R,N | Implement the WMO Siting Classification Scheme in RA V, through: <ul style="list-style-type: none"> Provision of information and training to Member countries, and Adoption of new procedures by Member countries. | WMO Siting Classification Scheme is implemented in RA V. | 201xxx | WG-Infrastructure |
| 6.2.5 R | Determine capacity of WMO Members in RA-V to maintain and submit to WMO interpretation metadata (as currently required for Vol.A) | Report on the capacity of WMO Members in RA-V to maintain and submit to WMO interpretation metadata (as currently required for Vol.A)... | 2014 | WG-Infrastructure (TT-WIGOS). |

R-WIP-V: Table of Implementation Activities (7)

| 7. The WIGOS Operational Information Resource (WIR) | | | | |
|---|--|--|--|-------------------------------|
| No. | Activity | Deliverables | Timeline | Responsibility |
| 7.2.1 R | Request, support and encourage Members to provide up-to-date metadata to the WIR and ensure its ongoing maintenance. | Up-to-date metadata maintained at WMO. | 201x- (dependent on completion of database) | WG-Infrastructure (TT-WIGOS). |



R-WIP-V: Table of Implementation Activities (8)

| 8. Data discovery, delivery and archival | | | | |
|--|--|--|----------|-----------------------------|
| No. | Activity | Deliverables | Timeline | Responsibility |
| 8.2.1 R | Foster increased exchange of observations data and discovery metadata using WIS in the Region, through awareness raising and provision of guidance for the adoption of WIS standards, including implementation of Data Collection and Production Centres (DCPC) and National Centres (NC), in collaboration with GISC Melbourne. | Increased provision of "discovery metadata" hence accessibility of data through the WIS. | 2012-15 | WG-Infrastructure (TT-WIS). |
| 8.2.2 R | Encourage Member countries to share data via the WIS, including from organizations other than NMHSs. | New sources of data are available through the WIS. | 2012-15 | WG-Infrastructure (TT-WIS). |



R-WIP-V: Table of Implementation Activities (9)

9. Capacity development

| No. | Activity | Deliverables | Timeline | Responsibility |
|------------------------|---|---|----------|---|
| 9.2.1 R | Assist Member countries to introduce or improve institutional mandates and policies relating to observing systems. | Improved institutional mandates and policies in Member countries relating to observing systems. | 2012-15 | Management Group, supported by TT-WIGOS. |
| 9.2.2 9.3.1 R, N | Assist Member countries to fill gaps (both infrastructure and human capacities) in their WIGOS observing systems, in particular: <ul style="list-style-type: none"> Assist Fiji to fully implement and sustain their calibration facilities (end of 2013); | Gaps (both infrastructure and human capacities) in the WIGOS observing systems of Member countries are identified and filled. | 2012-15 | WG-Infrastructure (TT-WIGOS, TT-TO), in collaboration with Regional partners and Members. |



R-WIP-V: Table of Implementation Activities (10)

10. Communication and outreach

| No. | Activity | Deliverables | Timeline | Responsibility |
|-------------|---|---|----------|--|
| 10.2.1 R | Contribute to WIGOS communication and outreach across Region V by: (i) responding to the role defined in the ICG-WIGOS communication strategy; (ii) utilising material provided by WIGOS-PO to raise awareness and commitment to WIGOS in Region V. | Effective communication and outreach for WIGOS across Region V. | 2012-15 | WG-Infrastructure (TT-WIGOS) and Management Group. |
| 10.3.1 N | Contribute to WIGOS communication and outreach within Member Countries by: (i) responding to the role defined in the ICG-WIGOS communication strategy; (ii) utilising material provided by WIGOS-PO to raise awareness and commitment to WIGOS in Region V. | Effective communication and outreach for WIGOS within Member countries. | 2012-15 | WMO Member countries in Region V. |



Thank you for your attention

Further WIGOS information at:

- www.wmo.int/wigos

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